

REMARKS

Claims 1-10

No prior art of record anticipates or renders obvious the invention disclosed in claims 1-10. Therefore, claims 1-10 are allowable.

Support for Claims 11-15

Applicant submits that new claims 11-20 are directed to subject matter that is expressly or inherently disclosed in the specification as filed.

Claim 11

Independent claim 11 relates to a sulphurous acid generator apparatus that comprises “a burn chamber in which to combust sulphur, the burn chamber comprising one or more sidewalls, a base, a lid and a gas outlet; a first conduit connected to the gas outlet for conducting sulphur dioxide gas; and a second conduit for conducting a stream of water, the second conduit comprising a restrictor, wherein the first conduit extends into the restrictor so as to both point and terminate downstream in the restrictor.” Support for the first elements of this claim (i.e., the claimed burn chamber, the first conduit, and the second conduit) is found in paragraphs [0045] through [0050] and Figures 1 and 4 of the specification.

Similarly, support for the element that recites that “the first conduit extends into the restrictor so as to both point and terminate downstream in the restrictor” is found in Figure 4. In particular, Figure 4 shows “[a] length 514 of restrictor 510 encloses pipe end 76.” (Paragraph [0050]). Moreover, as illustrated by the water flow arrows, Figure 4 shows that pipe end 76 both points and terminates downstream in restrictor 510.

Claims 12, 13, 14, and 15

New claims 12, 13, 14, and 15 recite additional elements to the sulphurous acid generator apparatus of claim 11. These claims are also supported by the application. For instance, claims 12, 13, 14, and 15 are expressly supported by at least claims 4, 8, 9, and 10 respectively. (See MPEP § 608.01(I), stating “In establishing a disclosure, applicant may rely not only on the

description and drawings by also on the original claims.”). Additional support is also found in paragraphs [0053] through [0056] and Figure 6 of the application.

Claim 16

Independent claim 16 recites a method for using (1) “a sulphurous acid generator apparatus,” the method comprising (2) “contacting water with sulphur dioxide gas in a sulphurous acid generator apparatus to produce a treated acidic water.”

As is the case with the sulphurous acid generator of claim 11, support for the sulphurous acid generator apparatus of claim 16 is provided in paragraphs [0045] through [0050] and Figures 1 and 4 of the specification.

With respect to “contacting water with sulphur dioxide gas in a sulphurous acid generator apparatus to produce a treated acidic water,” the disclosure states that within the generator “sulphur gases are drawn into the flow of water, [and] the sulphur gases dissolve into the water to create an acid of sulphur . . . [so as to] lower the pH or alkalinity of the water.” (Paragraph [0017]). Similarly, Figure 1 shows that water flows into water line 500 and that a treated acidic mixture exits the water line 500.

Claim 17

New claim 17 recites an additional element to the sulphurous acid generator of claim 16. Support for claim 17 is expressly found in claim 4 of the application. Moreover, additional support for claim 17 is expressly found in paragraphs [0053] through [0056] and Figure 6 of the application.

Claim 18

New claim 18 relates to (1) “improving crop growth” by (2) “irrigating crops with the treated acidic water.” With respect to the element of “improving crop growth,” the disclosure states that an “increase in irrigation alkalinity . . . renders irrigation water detrimental to soil, crop growth and irrigation water efficiency.” (Paragraph [0003]). In contrast, the disclosure states that such water “can be reclaimed for soil rehabilitation and irrigation by adding lower pH sulphurous acid to the alkaline water.” (*Id.*). The disclosure states that the claimed sulphurous

acid generator can be used for such purposes. Specifically, the disclosure states that “by adding the sulphurous acid produced by the generator to alkaline water,” the generator “can be used to improve alkaline irrigation water,” increase “the availability of sulphur in the water to act as a nutrient,” improve the “capillary action of the soil,” increase “cation exchange capability, and decrease[] tail water run-off and tillage and fertilizer costs.” (Paragraph [0007]). The skilled artisan would recognize that each of these functions of the sulphurous acid generator helps improve crop growth over the alkaline irrigation water that is “detrimental to . . . crop growth.” (Paragraph [0003]).

With respect to irrigating crops with the treated acidic water produced by the sulphurous acid generator, the disclosure states that the sulphurous acid generator “can be used to improve alkaline irrigation water.” (Paragraph [0007]). The skilled artisan will recognize that irrigation water is used to irrigate crops; especially when understood in the context of farming (Paragraph [0003]) and agricultural use (Paragraph [0008]). Moreover, the skilled artisan will recognize that because the generator adds “sulphurous acid to alkaline water [and] increases the availability of sulphur in the water to act as a nutrient,” this treated acidic water is applied to crops where the sulphur can act as a nutrient. (Paragraph [0007]).

Claim 19

New claim 19 relates to “increasing a level of sulphur in the crops by allowing the crops to take up sulphur from the treated acidic water” that is produced by the claimed apparatus. As previously stated, the disclosure states that the by adding sulphurous acid to alkaline water, the sulphurous acid generator “increases the availability of sulphur in the water to act as a nutrient.” (*Id.*) Applicant submits that the skilled artisan would recognize that crops would inherently take up some of this sulphur that acts as a nutrient and, thereby, increase sulphur levels in the crops.

Claim 20

New claim 20 relates to “increasing a level of a sulphur-containing chemical compound in the crops by allowing the crops to take up sulphur from the treated acidic water.” The skilled artisan would understand that as the crops take up “sulphur in the water [that] act[s] as a nutrient” (*See* new claim 19 and paragraph [0007]), the sulphur reacts with other chemicals

in the plant so as to increase the level of sulphur-containing chemical compounds in the crops.

In view of the aforementioned support, both express and inherent, Applicant respectfully submits that new claims 11-15 are supported by the disclosure.

Conclusion:

If at any time the Examiner believes that a discussion with Applicant's attorney would be helpful, the Examiner is invited to contact the undersigned at (801) 328-3600. Additionally, if there is any fee due in connection with the filing of this Amendment, including a fee for additional independent claims, please charge the fee to our Deposit Account No. 50-0843.

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Respectfully submitted,

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